Listing of Claims

This listing of claims will replace all prior versions, and listings, of the claims in this application.

Claim 1 (currently amended): A direct conversion quadrature receiver, comprising:

a primary local oscillator (LO) that down-converts a received RF signal to a quadrature intermediate frequency (IF) signal; and

a dithering controller responsive to said quadrature IF signal generated by said primary LO for communicating a feedback signal back to said primary LO, said feedback signal controlling an oscillation frequency of said primary LO, the dithering controller comprising

a filter bank comprising one or more I signal component filters and one or more Q signal component filters, said filter bank generates a plurality of frequency spectra from said quadrature IF signal,

an interferer level detector that measures each frequency spectra of said plurality of frequency spectra,

a frequency discriminator that generates a frequency number for each spectra output from said filter bank, and

a level/frequency threshold including a predetermined power threshold that compares a signal power of each frequency spectra to said predetermined power threshold, wherein said level/frequency threshold provides a step-required output to said LO dithering controller if a frequency spectra of said plurality of frequency spectra exceeds said predetermined power threshold;

wherein said dithering controller offsets down-conversion of said RF signal by said primary LO from a zero-IF in order to reduce a phase and gain error of said quadrature IF signal.

Claim 2 (original): The receiver of claim 1, further comprising a phase and gain error measurement apparatus that measures a phase and gain error of said quadrature IF signal and generates a phase and gain error signal, wherein said dithering controller offsets said primary LO based on said phase and gain error signal.

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Claim 3 (previously presented): The receiver of claim 2, wherein said dithering controller controls said primary LO to step said quadrature IF signal in response to said phase and gain error signal.

Claim 4 (original): The receiver of claim 1, further comprising a memory storing a predetermined step size that steps said primary LO away from a current quadrature IF signal and a predetermined step limit that limits a stepping of said primary LO to a predetermined frequency range.

Claim 5 (original): The receiver of claim 1, wherein said dithering controller controls said primary LO to dither said quadrature IF signal according to a predetermined hop sequence.

Claim 6 (original): The receiver of claim 1, further comprising a memory storing a predetermined hop sequence that dithers said primary LO over a plurality of hop frequencies.

Claim 7 (cancelled)

Claim 8 (previously presented): The receiver of claim 1, wherein the dithering controller further comprises:

a phase and gain error limit threshold that compares a current phase and gain error to a previous phase and gain error, generates a phase and gain error difference, and generates a step-required output to said LO dithering controller if said phase and gain error difference exceeds a predetermined phase and gain error limit threshold.

Claims 9-20 (cancelled)

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Claim 21 (new): A direct conversion quadrature receiver, comprising:

a primary local oscillator (LO) that down-converts a received RF signal to a quadrature intermediate frequency (IF) signal; and

a dithering controller responsive to said quadrature IF signal generated by said primary LO for communicating a feedback signal back to said primary LO, said feedback signal controlling an oscillation frequency of said primary LO, wherein the dithering controller comprises a phase and gain error limit threshold that compares a current phase and gain error to a previous phase and gain error, generates a phase and gain error difference, and generates a step-required output to said LO dithering controller if said phase and gain error difference exceeds a predetermined phase and gain error limit threshold;

wherein said dithering controller offsets down-conversion of said RF signal by said primary LO from a zero-IF in order to reduce a phase and gain error of said quadrature IF signal.

Claim 22 (new): The receiver of claim 21, further comprising a phase and gain error measurement apparatus that measures a phase and gain error of said quadrature IF signal and generates a phase and gain error signal, wherein said dithering controller offsets said primary LO based on said phase and gain error signal.

Claim 23 (new): The receiver of claim 22, wherein said dithering controller controls said primary LO to step said quadrature IF signal in response to said phase and gain error signal.

Claim 24 (new): The receiver of claim 21, further comprising a memory storing a predetermined step size that steps said primary LO away from a current quadrature IF signal and a predetermined step limit that limits a stepping of said primary LO to a predetermined frequency range.

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Claim 25 (new): The receiver of claim 21, wherein said dithering controller controls said primary LO to dither said quadrature IF signal according to a predetermined hop sequence.

Claim 26 (new): The receiver of claim 21, further comprising a memory storing a predetermined hop sequence that dithers said primary LO over a plurality of hop frequencies.

Claim 27 (new): The receiver of claim 21, wherein the dithering controller further comprises:

a filter bank comprising one or more I signal component filters and one or more Q signal component filters, said filter bank generates a plurality of frequency spectra from said quadrature IF signal;

an interferer level detector that measures each frequency spectra of said plurality of frequency spectra;

a frequency discriminator that generates a frequency number for each spectra output from said filter bank;

a level/frequency threshold including a predetermined power threshold that compares a signal power of each frequency spectra to said predetermined power threshold;

wherein said level/frequency threshold provides a step-required output to said LO dithering controller if a frequency spectra of said plurality of frequency spectra exceeds said predetermined power threshold.

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